



**SUMA Protocol** Litepaper

# Introduction to **SUMA** Platform & Protocol

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# Our Planet, Our Problem

The planet we call home is under considerable stress. Climate change, an issue of global importance, is transforming the world we know. As per the Intergovernmental Panel on Climate Change (IPCC), the earth's temperature has risen by around 1.1°C since pre-industrial times, and this trend is showing no signs of slowing down.

With increasing temperatures come significant consequences, including the melting of ice caps, rising sea levels, extreme weather conditions, and devastating natural disasters. These changes not only endanger our ecosystems such as plants and animals, but also pose significant threats to human societies and economies.

At the heart of the climate change crisis is carbon dioxide (CO<sub>2</sub>), a greenhouse gas emitted largely by human activities, particularly the burning of fossil fuels and deforestation. In 2020, global carbon emissions stood at a staggering 31.5 gigatons, a level unsustainable for our planet's health.

Businesses, responsible for a large part of these emissions, have a crucial role to play. The need for a swift and meaningful transition to a low-carbon economy is more apparent than ever. But this transition involves a complex journey of understanding and managing carbon footprints, devising effective decarbonization strategies, and compensating for unavoidable emissions, often a challenging path for many businesses.

It's in this context that our SUMA (Sustainability Manager) Platform seeks to make a difference. Recognizing the importance of the situation and the need for accessible and effective solutions, we are developing a comprehensive online platform designed to simplify the journey towards carbon neutrality for businesses.

**Read on to discover how our platform can help companies to not only take care of our planet but also embrace a sustainable and profitable future.**

# Greed Green is Good

A transition to carbon neutrality is not just a moral imperative for businesses, it's also a strategic one. The private sector is increasingly recognizing the substantial environmental benefits and economic advantages that comes with reducing their carbon footprint.

## Environmental Importance

Every business that transitions to carbon neutrality contributes to global efforts against climate change. They help to reduce the volume of greenhouse gasses being pumped into the atmosphere, lessening the environmental damage caused by our industrial activities. Businesses also have an opportunity to lead by example, encouraging other businesses, consumers, and their broader community to follow suit.

## Business Benefits

From a business perspective, carbon neutrality is a strategic goal that can bring significant competitive advantage. Firstly, customers, employees, and investors are increasingly conscious of environmental issues. [A 2020 survey by McKinsey](#) found that more than 60 percent of respondents considered the use of environmentally friendly practices an important factor in their purchasing decisions. Businesses that commit to carbon neutrality are likely to attract these environmentally conscious stakeholders.

Secondly, carbon neutrality can also result in operational efficiencies. By seeking to reduce their carbon footprint, companies often uncover opportunities to improve energy efficiency and reduce waste, leading to cost savings. For instance, [Unilever reported cumulative cost savings of over €1 billion](#) from eco-efficiency measures in their factories since 2008.

Lastly, many governments around the world are tightening environmental regulations and introducing carbon pricing mechanisms. Businesses that proactively decarbonize can stay ahead of these regulations, avoid potential penalties, and may even benefit from incentives or subsidies.

In conclusion, achieving carbon neutrality presents businesses with a valuable opportunity – a chance to protect the planet, improve stakeholder relationships, optimize operations, and anticipate regulatory trends. However, the path to carbon neutrality can be complex and challenging.

# Why AI Can Make Sustainability Management Better?

In recent months, we've witnessed an unprecedented rate of transformation within the field of artificial intelligence. AI development has accelerated at a pace that is unparalleled since the dawn of the digital age. This acceleration has largely been driven by remarkable advancements in AI language models, such as GPT-4, which have expanded views of what AI can achieve.

## A fundamental advantage we have is the powerful synergy of AI and unique datasets.

A fundamental advantage we have is the powerful synergy of AI and unique datasets. By harnessing the latest AI technology, we're utilizing a robust blend of public, private, and personal data to train our AI system, known as the Sustainability Manager AI, or SUMA for short. This combination equips SUMA with a comprehensive understanding of sustainability practices and nuances, enabling it to provide informed, data-driven recommendations.

SUMA, our AI-based Sustainability Manager, provides support for businesses and organizations by guiding them towards improved sustainability practices. We are excited about the possibilities that SUMA brings to the table. We're not just adapting to this new AI-driven era - we're shaping the future of sustainability management and climate action, seizing the opportunities that recent advancements in AI provide.

And it's not just about the intelligence. One of the greatest qualities of AI is its potential for humanization. SUMA will serve as a humanistic helper for companies. Rather than making sustainability management a harsh or mechanistic process, our AI helper will transform it into a warm and pleasant experience, building a more positive and proactive approach towards sustainability. *More about the Sustainability Manager AI on page 17.*

### Related links:

Marc Andreessen - Why AI Will Save the World: <https://a16z.com/2023/06/06/ai-will-save-the-world/>

# The Challenge: Carbon Neutrality

The journey to carbon neutrality, while invaluable, is full of challenges that can be daunting for many businesses.

## Understanding and Measuring Carbon Emissions

The first challenge lies in the accurate measurement and understanding of a company's carbon emissions. Many businesses find it difficult to precisely account for their carbon footprint, a process which requires collecting data from various activities across the organization, including direct operations, energy consumption, and even the supply chain. This process, known as carbon accounting, is complex and often requires specialized knowledge and resources.

## Lack of Expertise in Decarbonization

Even with an accurate account of their emissions, businesses may struggle to effectively reduce them due to a lack of in-house expertise. Decarbonization, the process of reducing carbon emissions, requires an understanding of both the company's specific operations and the wider landscape of carbon reduction technologies and practices. Without this expertise, businesses may find it challenging to develop and implement a practical and effective decarbonization strategy.

## Sourcing High-Quality Carbon Credits

For those emissions that can't be eliminated, businesses can compensate by purchasing carbon credits, which fund projects that reduce or remove greenhouse gas emissions elsewhere. However, sourcing high-quality carbon credits is not straightforward. Businesses must ensure that the projects they support are legitimate, effectively reduce emissions, and do not cause unintended negative impacts. Additionally, the carbon credit market can be opaque and complex to navigate.

## Managing Transition and Stakeholder Expectations

Finally, the transition to carbon neutrality requires careful change management and communication. Businesses must balance the expectations and needs of various stakeholders, including investors, customers, employees, and regulators. This includes managing the costs of transition, communicating progress transparently, and ensuring business continuity throughout the process. In the next section, we will introduce our platform, a comprehensive solution designed to address these challenges and simplify the journey to carbon neutrality for businesses.

# The Problem with Current Carbon Solutions

While many solutions are available on the market to assist businesses on their path to carbon neutrality, these solutions often fall short in addressing the complex and interconnected challenges businesses face.

## Inadequate Carbon Accounting Tools

Existing carbon accounting tools often provide a limited view of a company's carbon footprint. Many focus solely on direct emissions from a company's operations, neglecting indirect emissions from the supply chain or energy consumption, which can form a substantial part of a company's total carbon footprint. Also, these tools often lack the advanced analytics capabilities required to help businesses understand their emissions data deeply and identify targeted opportunities for reduction.

## Generic Decarbonization Advisory

Traditional consulting services can provide valuable expertise on decarbonization. However, these services often lack scalability and personalization. They usually offer generic advice that does not take into account the unique characteristics of each business, and their high cost makes them inaccessible for many smaller businesses.

## Complex Carbon Credit Market

When it comes to carbon credits, businesses often find themselves navigating a complex and fragmented market. They need to make sense of different types of credits, various pricing models, and varying quality standards. Furthermore, current systems often lack transparency, making it difficult for businesses to verify the legitimacy and impact of the projects they support. All these gaps in current solutions add complexity, uncertainty, and cost to the already challenging journey towards carbon neutrality. This is where our platform steps in. Our innovative solution integrates advanced carbon accounting, AI-based decarbonization advisory, and high-quality carbon credits into a single, user-friendly SUMA Platform.

With SUMA, we aim to simplify the path to carbon neutrality and make it accessible for businesses of all sizes.

# Overview of SUMA Platform

SUMA Platform is a sustainability-focused software-as-a-service (SaaS) solution designed to guide businesses and entire ecosystems towards net-zero emissions. The platform provides a suite of tools, including modules for accurate carbon accounting, strategic decarbonisation advisory, effective carbon offsetting, and compliant regulatory reporting.

Platform Module	Function	Protocol Method
<b>Impact Profile</b>	SUMA accounts for individuals and corporations hold all sustainability information, with privacy settings that give users 100% control.	The account is a KYC-verified dynamic NFT that can be added to any social account in the future, and users receive a profit share if their data is sold.
<b>Carbon Accounting</b>	The starting point for sustainability is knowing the user's current carbon footprint. SUMA enables users to calculate this with great accuracy.	The method is based on the United Nations-approved GHG Protocol. In addition to that, we have created sector-specific data points to improve accuracy.
<b>Carbon Footprint Report</b>	Once users have completed their Carbon Accounting, this report will be added to their Impact Profile as a first step towards achieving net zero.	As a non-transferable NFT, this Carbon Footprint Report creates the foundational information for reporting based on the EU's upcoming Corporate Sustainability Report Directive.
<b>Decarbonisation Advisory</b>	Based on the Carbon Accounting Report and related data, the AI creates a plan for decarbonisation to be shared with the company. The company and the AI can then go through several rounds of feedback and improvements in order to finalize a decarbonisation plan.	Carbon accounting and other private data will be analyzed by AI on SUMA's servers and combined with public data to create a personalized plan for the company. Feedback is a way to improve prompts and develop a plan that the company can approve.
<b>Carbon Offsetting</b>	With the data from the Carbon Accounting Report and the Protocol rules, the platform can initiate carbon offsetting, starting with a +20% overcompensation.	For offsetting, the Protocol examines the quality of the Carbon Accounting Report - the proportion of verified inputs versus manually submitted ones - and uses that information to create a secure overcompensation margin. The client must agree to this margin to receive the Proof-of-Netzero Certificate.
<b>Proof-of-Netzero Certification</b>	This certification is the result of a combination of the Carbon Footprint Report and the Carbon Offsetting process.	Issued as a non-transferable NFT, the certificate can be verified on the blockchain and displayed on the company's Impact Profile and website.
<b>Regulatory Reporting</b>	Based on the Carbon Accounting Report and Proof-of-Netzero, the company can process an EU regulatory compliant Corporate Sustainability Report.	With the assistance of the platform's AI, companies can create compliant CSRD reports, including additional ESG aspects of social inclusion and good governance.
<b>SUMA for Ecosystems</b>	This module streamlines supply chain data collection for businesses, allowing suppliers and ecosystem partners to join the platform. They can calculate and offset their carbon footprints, contributing to the ecosystem's climate action goals.	Companies can invite ecosystem partners, manage communication directly, gather data related their carbon footprints, and track and monitor the reduction efforts of their ecosystem partners.

## Tech Scope – Focus on Scope 3

SUMA Platform enables comprehensive carbon accounting, offsetting and management across supply chains and crypto ecosystems.

The calculation of a business's carbon footprint involves the assessment of Scope 1, 2, and 3 emissions. At SUMA, we're developing a carbon data engine designed for the analysis and calculation of all three scopes, with a primary focus on Scope 3. However, recognizing the unique needs of technology companies, we're introducing an innovative "Tech Scope" that accounts for specific energy consumption needs, including server and cloud services, blockchain transactions, future AI-specific computing demands, and equipment lifecycle management.

**For the average tech company, Scope 3 emissions constitute about 80% of their total carbon footprint.**

For most companies Scope 3 the indirect emissions are the largest portion, making up 65-95% of most companies carbon footprint, in tech companies case often due to purchased goods and services. This category includes emissions linked to the production, transportation, and disposal of these goods and services. Elements like business travel, employee commuting, lifecycle management of computers and servers, cloud service usage, and blockchain transactions are all factored in.

The SUMA platform assists clients in identifying emission hotspots via automated calculations and analytics. SUMA's AI system plans initiatives for emission reduction once the user gains a thorough understanding of their emissions.

SUMA's carbon data engine is continually evolving, expanding its database of emission factors, and compiling data from both public and private databases, as well as our proprietary resources.

### A Collaborative Platform for Decarbonization

Businesses and organizations can invite their supply chains and ecosystem partners to join the platform to collaborate and work together towards reducing their emissions. Our clients can view their suppliers emission data, actions and progress in a single dashboard. They can drill down to specific suppliers to find opportunities for meaningful carbon reductions.

## SUMA Protocol

## SUMA for Ecosystems

For most businesses, over 80% of emissions originate from suppliers and the supply chain. To establish meaningful reduction strategies, it's crucial for businesses to engage their ecosystems, supporting them in lowering their emissions.

The SUMA For Ecosystems module simplifies the process of collecting and analyzing supplier and ecosystem data for our clients.

### SUMA for Funds: Improving VC funds ESG credentials

As part of SUMA Platform, SUMA for Funds has been explicitly designed to serve the unique needs of venture capital (VC) firms. These firms typically count institutional investors, such as pension funds, among their limited partners.

These investors are exhibiting an escalating interest in the Environmental, Social, and Governance (ESG) elements of their venture capital investments and place increasing value on related reporting mechanisms.

SUMA for Funds provides an array of powerful tools that contribute to amplifying the Corporate Social Responsibility (CSR) and ESG credentials of venture capital portfolios. The platform enables VCs to effectively leverage and highlight the low-carbon status of their portfolios - a compelling feature for ESG-informed institutional investors.

SUMA for Funds allows VCs to invite and onboard their portfolio companies onto the platform. Here, they are guided through a comprehensive carbon accounting and offsetting procedure, with the ultimate aim of securing a Proof-of-Netzero certification. This enhances both their sustainability efforts and credibility in the eyes of ESG-conscious investors.

The platform's robust reporting tools demystify the task of analyzing carbon footprints across diverse portfolio companies. This feature facilitates easy comparisons and summaries, enabling VCs to maintain a vigilant eye on their environmental impact - an increasingly important factor in the venture capital landscape.

In addition to these features, SUMA for Funds has been designed to adhere to the stringent requirements of the EU's Sustainable Finance Disclosure Regulation (SFDR). Equipped to provide all necessary ESG information, the platform ensures VCs' portfolios are fully compliant with the latest EU regulations. This empowers VCs to make informed, ESG-aligned decisions, strengthening their appeal to institutional investors.

## Use case: Blockchain network

Progressing towards a net-zero blockchain ecosystem.

A layer 1 blockchain network needs to compensate for its historical carbon footprint and wants to understand the impact of its entire ecosystem, which includes all projects and companies building protocols and applications on top of their blockchain network.

### Collaboration Platform

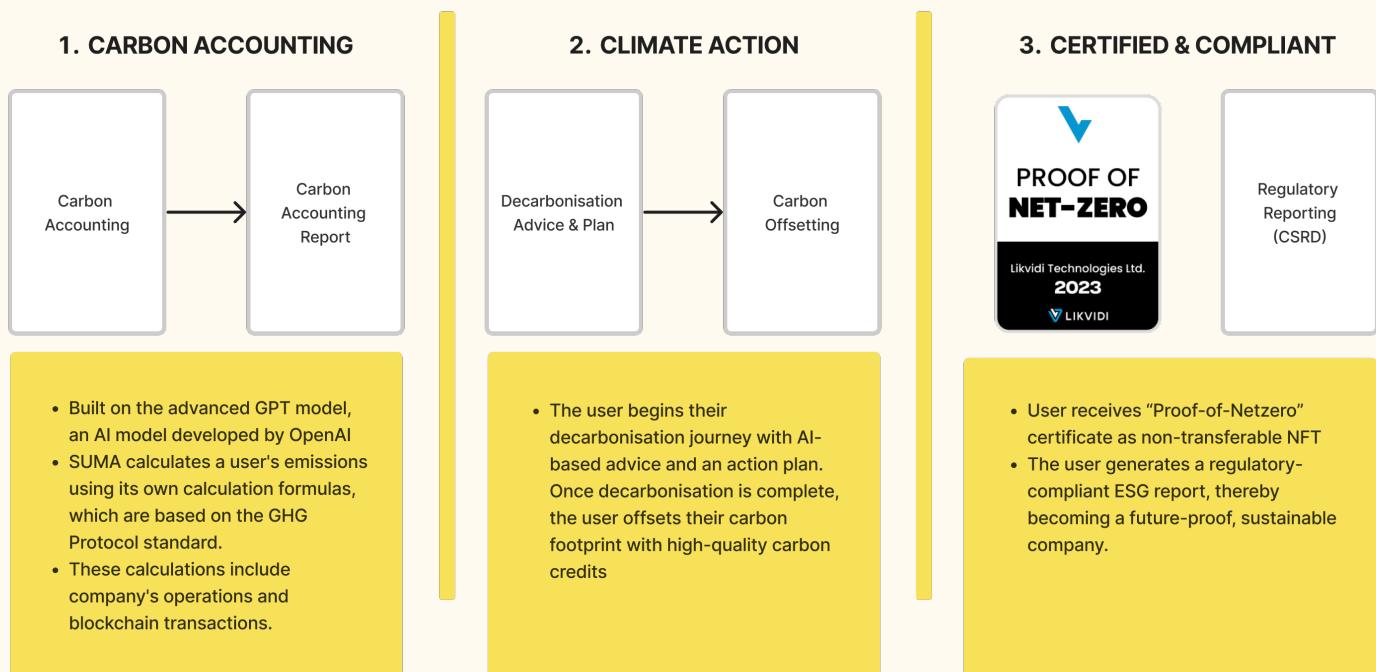
The company, which in this context refers to the blockchain network, can invite its suppliers, ecosystem partners, and employees to join the SUMA Platform. Suppliers and ecosystem partners include companies and projects that build applications or provide other services on top of the blockchain network. All participants can then proceed with calculating their carbon footprints, with employees having the opportunity to measure their personal carbon footprints. Once calculated, they can receive decarbonization advice and proceed with offsetting their emissions.

The company can manage communications directly, track the progress of its partners and employees, gather data related to their carbon footprints, and effectively monitor the reduction efforts within the ecosystem.

In this way, the entire ecosystem, including company leadership, operational departments, suppliers, and employees, can work towards achieving net-zero status and becoming carbon neutral. This approach aligns everyone within the company with the same decarbonization strategy, ensuring a cohesive and effective journey towards sustainability.

**Next generation blockchains will have ecosystems  
that are 100% carbon neutral**

# SUMA Platform Process



1. The user enters the platform, creates an account, adds their organization's details, and initiates the carbon accounting process by calculating their carbon footprint. This calculation is conducted through a chat-based interface, guided by the platform's AI model, which assists the user in achieving the necessary level of accuracy.
2. Upon completing the calculation, the user receives their Carbon Accounting Report, which provides in-depth details about their carbon footprint.
3. The user begins their decarbonization journey, aided by AI-generated advice and an action plan.
4. The user offsets their carbon footprint using LCO2 carbon tokens, with each token representing one tonne of carbon dioxide captured from the atmosphere.
5. Once the user completes the previous steps, they receive their Proof-of-Netzero certificate for that specific year.
6. The user can begin the process of completing the full CSRD Regulatory Reporting.

## SUMA Carbon Credit Tokenization

SUMA is developing technology to transition carbon credits to the blockchain, while also establishing a blockchain-based infrastructure for managing tokenized carbon credits and constructing carbon credit portfolios. This innovation unlocks potential for meaningful climate action on a larger scale, and the portfolio approach eliminates risks related to the carbon projects quality and enhances liquidity.

SUMA Protocol is connected to carbon registries such as [Verra](#) and [Gold Standard](#). Carbon credits from the traditional registries are then transferred to blockchain by immobilizing the carbon credits in the off-chain registry and then tokenized on blockchain by SUMA.

### Liquid Carbon Credit (LCO2)

LCO2 will be the first carbon portfolio included in the SUMA Platform.

LCO2 is a portfolio token issued as an ERC-1155 token on [Polygon blockchain](#). Each LCO2 token is backed with underlying project specific carbon credit (which in turn represents a reduction or removal of one metric ton of carbon dioxide from the atmosphere), therefore the portfolio tokens retain to this ratio of one token to one metric ton of carbon.

#### LCO2 Portfolio Requirements

1. **Verification:** Carbon credits needs to be verified by a well known verifier such as Verra, Gold Standard or Plan Vivo.
2. **Vintage:** LCO2 only accepts carbon credits starting from vintage 2016 onwards. Vintage refers to the year in which the emission reduction, avoidance, or removal occurred that the credit represents.
3. **Third party ratings:** The carbon credits needs to have a “high rating” from a reputable third-party rating firm such as [BeZero](#) or [Sylvera](#)
4. **Focus on nature:** LCO2 portfolio will be focused around nature-based carbon credits.

## LCO2 Key Innovations

### Portfolio Approach

LCO2 represents an active portfolio of 10-20 different carbon credit projects, providing users with a diversified and risk-managed approach to carbon offsetting.

### Diversified & Verified

The LCO2 portfolio comprises carbon credits from various sectors and geographic areas, adding a layer of risk diversification. All carbon credits included in the pool are verified by a reputable verifier such as Gold Standard or Verra.

### Third-party Ratings

The credibility of LCO2 is further bolstered by the requirement for each carbon credit in the portfolio to secure a "high-quality" rating from third-party rating firms like Sylvera and BeZero.

### Co-Benefits

In alignment with our commitment to comprehensive sustainability, the selection criteria for carbon credits extend beyond carbon offsetting. We also consider co-benefits, ensuring that LCO2 supports all 17 [United Nations Sustainable Development Goals](#).

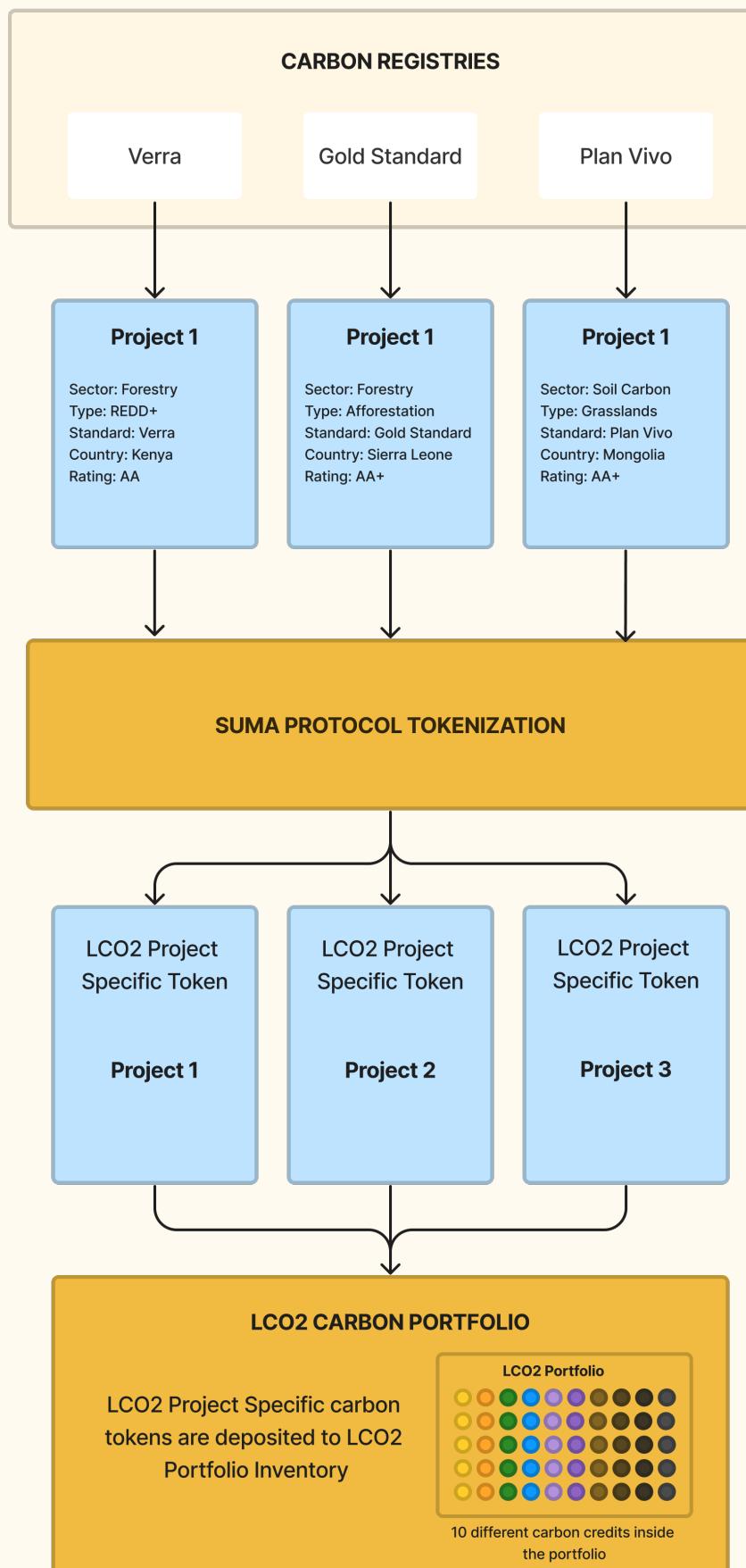
### Transparent

We maintain full transparency in our operations. All carbon credits in the portfolio, including project types, vintages, and volumes issued and offsetted, is publicly available on SUMA Platform.

### Liquidity

LCO2 pioneers as the first carbon token tradable on SUMA's Automated Market Making Swap Exchange (AMMSE), offering 24/7 liquidity and convenience to its holders.

## LCO2 Issuance Flow



## Insight: Carbon Markets Goes Blockchain

### Future of Carbon Markets

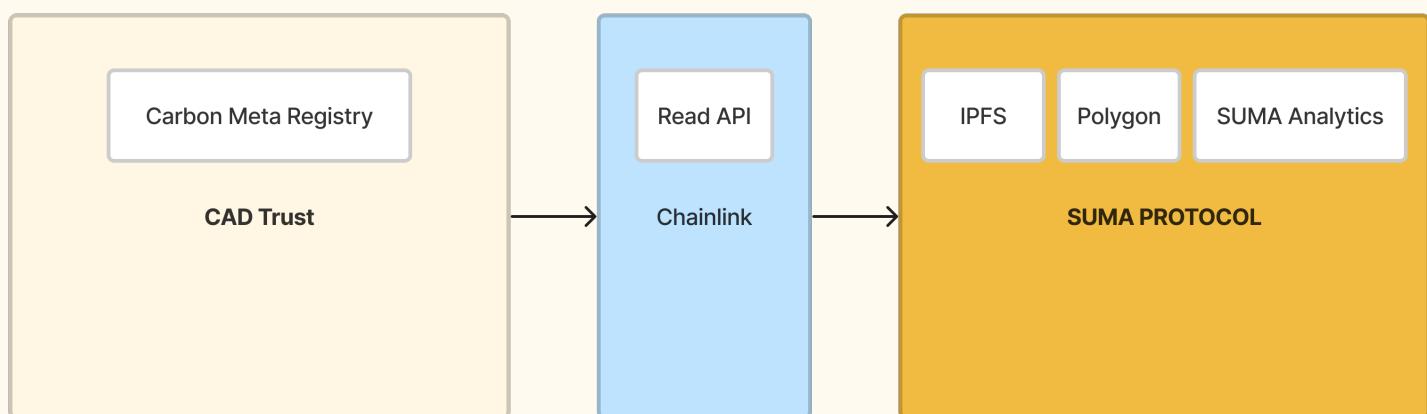
There is no doubt that the future of carbon markets will reside on the blockchain, improving the accessibility, transparency, and data availability of carbon credits. Currently, this shift in the voluntary carbon market is led by two major market participants: the World Bank's Climate Action Data Trust and Chainlink, one of the leading blockchain infrastructure companies.

### Climate Action Data Trust

**Climate Action Data Trust (CAD Trust)** is a decentralized metadata platform built by the World Bank. It links all major carbon credit registry data to enhance transparent accounting for carbon credits. The CAD Trust open-source metadata system uses blockchain technology to create a decentralized record of carbon market activity. Essentially, it's a meta-registry that aggregates all the carbon credit data from all the major registries into one place

### SUMA Protocol - CAD Trust - Chainlink

The SUMA Protocol will be connected to CAD Trust to read data related to the carbon credits included in the LCO2 Pool. This connection will be facilitated by **Chainlink**, which provides the infrastructure to link the Polygon smart contract to external data. Chainlink is the leading blockchain infrastructure company specializing in connecting blockchain-based data to external sources. With the combined capabilities of CAD Trust and Chainlink, we can create an automated system for reading and appending data to LCO2 carbon tokens.



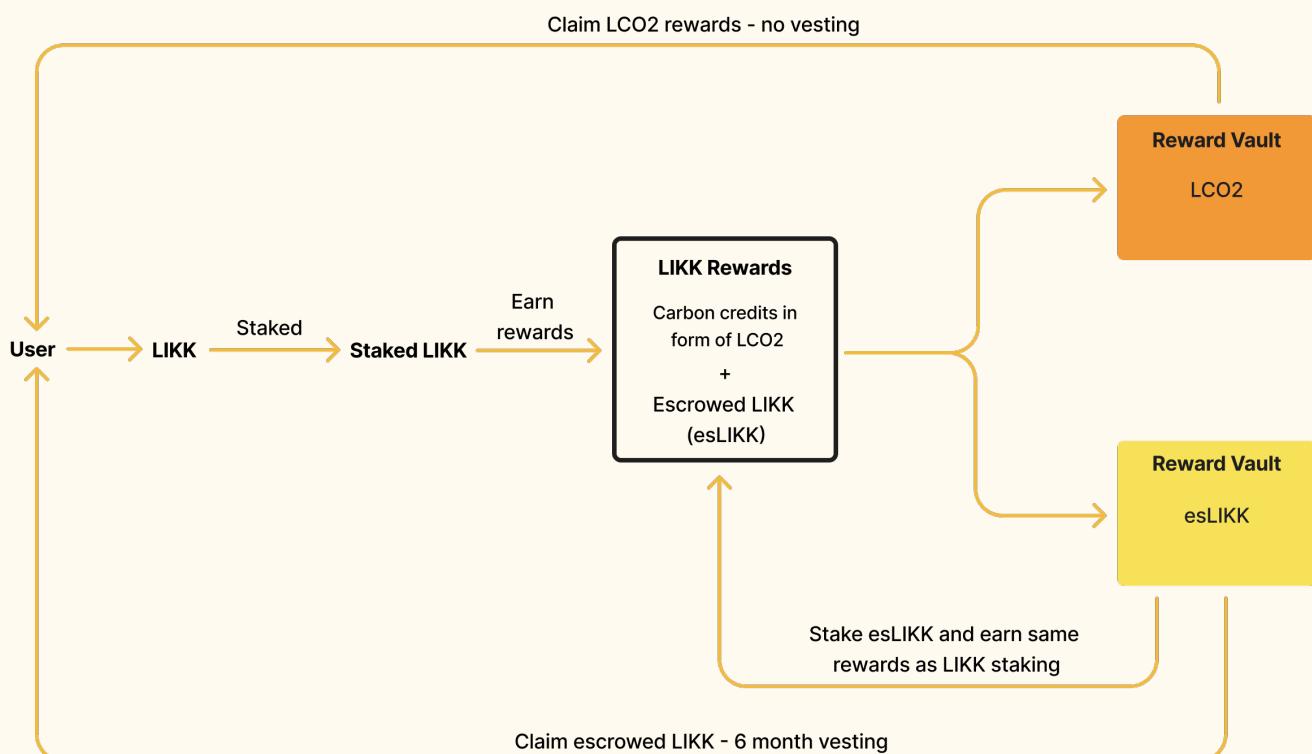
*The SUMA Protocol reads data from the CAD Trust. This data is then uploaded to IPFS and included in the LCO2 tokens metadata*

# The LIKK Token

The LIKK token is the SUMA platform's native token that, when staked, earns carbon credits helping the token holder to become carbon neutral.

The functions of the LIKK token include:

- **Staking:** The main utility for LIKK is staking which presents unique combination of carbon credits (LCO2) and LIKK tokens (escrowed LIKK as reward from the staking. A portion of the protocol fees are used for purchasing LCO2 carbon credits and distributing them as rewards for LIKK stakers.
- **Discounts:** Companies that utilize the SUMA Platform can use the LIKK token to receive discounts.
- **LP Boost:** Hold LIKK token to boost liquidity providing (LP) rewards from provided liquidity on LCO2 AMM pool.
- **Governance:** Governance-related functions will be implemented in the SUMA Protocol. Users will be able to vote and decide on how the carbon footprint calculations should evolve and vote on what types of carbon portfolios will be implemented in the SUMA Platform.



*LIKK Staking includes two types of rewards: LCO2 carbon tokens and LIKK as escrowed LIKK (esLIKK)*

# The Roadmap for Sustainability Manager AI

As the need for companies to adopt ESG practices continues to grow, we will be developing SUMA AI towards becoming first a co-pilot for sustainability managers and as technologies and their acceptance evolves, we are looking to turn the SUMA AI to a fully self operating AI worker that replaces, if business so want, the human worker for this role.

## Benefits of the AI worker:

- 1. Unmatched Regulatory Knowledge:** SUMA AI stays updated with all relevant rules and regulations by actively scanning and integrating this information into platform's datasets.
- 2. Proficiency in Sustainability Practices:** With extensive rules and regulations understanding, SUMA AI can research and recommend work flows and best practices that are the most suitable for the company.
- 3. Mitigating Knowledge Attrition:** By retaining and building upon its knowledge, SUMA AI eliminates the risk of knowledge loss followed by key employees' departure from the company.
- 4. Continual Learning:** SUMA AI is designed to improve its proficiency and adapt to new information daily.
- 5. Comprehensive Analysis and Reporting:** SUMA AI can actively monitor, generate insights and regulatory reports, perform detailed analysis, and draw comparisons as needed.
- 6. Streamlined Planning and Execution:** SUMA AI is equipped to create, execute, and delegate plans and tasks efficiently.

## Dataset creation

To build an efficient AI model, we focus on creating a suitable dataset for training. This process involves:

- **Gathering Q&A on Sustainability and Carbon Accounting:** We will source questions and answers from industry experts and publicly available resources, forming Q&A pairs that serve as the training data for the AI component. This will enable the AI model to generate appropriate responses to user queries.
- **Structuring data from relevant documents:** We will extract and convert unstructured data from ESG reports and other sustainability-related documents into structured data formats, such as tables or databases. This structured data can then be easily utilized by the AI model for various tasks.

## Summary: Exciting Times Ahead

We are at an exciting intersection of sustainability and technology. These forces are reshaping everything, from our energy sources to how businesses operate, to the role of artificial intelligence in our everyday lives.

In the years ahead, we see businesses worldwide beginning to prioritize sustainability. Here, the SUMA Platform offers a straightforward, cost-effective solution, guiding businesses towards their sustainability goals.

This shift is driven by increasing stakeholder demand from clients, employees, partners, and investors; wider trends towards sustainable practices; and evolving regulatory landscapes. As global agreements push companies towards net-zero emissions, the SUMA Platform aids businesses in keeping pace with new rules and regulations, particularly through compliance with the Corporate Sustainability Reporting Directive (CSRD).

A key trend that the SUMA Platform is prepared to harness is supply chain sustainability. To address the demand for thorough carbon accounting from suppliers, we're evolving the existing GHG Protocol's Scopes 1, 2, and 3, and introducing a tech-focused "Tech Scope". This innovation will help tech companies account for their unique energy consumption needs, including server and cloud services, blockchain transactions, future AI-specific computing demands, and equipment lifecycle management.

The journey to carbon neutrality is complex but essential for our planet's future. The SUMA Platform turns this complex task into a more manageable process. By simplifying carbon accounting, offering AI-driven decarbonization advisory, and ensuring effective carbon offsetting with trustworthy blockchain-secured carbon credits, SUMA empowers businesses on their path to sustainability.

**With SUMA, a sustainable future is not just a vision, it's a reachable goal.**

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